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REMARKS

Claims 1-25 are pending in this application.

Applicants gratefully acknowledge the Office Action's indication of allowable subject matter in claims 3-7, 9-12, 15, 16, 18, 19, and 21-24. However, for the reasons set forth below, Applicants respectfully assert that all of the claims are directed to allowable subject matter and that the application is in condition for allowance.

The Office Action rejects, under 35 U.S.C. § 103, claims 1, 2, 8, 13-14, 17, 20, and 25 over Shin (U.S. Patent No. 6,108,044), Shin (U.S. Patent No. 5,991,341), and Powell et al. (U.S. Patent No. 6,496,547). This rejections are respectfully traversed.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the reference or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references, when combined, must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure (MPEP 2142). The prior art must suggest the desirability of the claimed invention (MPEP 2143.01).

Powell et al. discloses a digital FM receiver employing combined sample-and-hold and integrate and dump detectors for improved bit error rates. According to Powell et al., the disclosure arises from an allegedly unexpectedly advantageous observation that, when the same limiter-discriminator (LD) output signal is presented to a sample-and-hold (S&H) detector and to an integrate and dump (I&D) detector, an error in one does not necessarily imply an error in the other because the S&H and I&D detector outputs are offset in time by one-half bit and they are not quite correlated. To the extent that the two detector outputs are uncorrelated, comparing the two detector output signals provides information sufficient to identify bit error locations, thereby allowing bit error correction in a subsequent decoder. With convolutional coding and Viterbi decoding, threshold-compensation and averaging of the two S&H and I&D detector output signals allegedly improves the receiver bit error rate (BER) performance by more than 3 dB over the soft-decision thresholded I&D detector alone. Adding diversity to the coding and using

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envelope-compensation instead of threshold-compensation in the S&H detector allegedly improves BER performance even more (col. 3, lines 8-26).

Applicants assert there is absolutely no motivation to use the digital FM receiver techniques disclosed in Powell et al. with the High Definition Television (HDTV) receivers disclosed in either of the Shin references. In particular, Powell et al. is not directed to improvements of the HDTV receivers disclosed in either of the Shin references. Powell et al. expressly discloses the purpose of the disclosure is to provide a new digital frequency-modulation (FM) LD receiver that can improve BER performance over that of a FM LD receiver having an I&D detector (col 3, lines 27-31 and Abstract). Such a receiver is not disclosed in the Shin references. Furthermore, each embodiment of Powell et al. is specifically used with a I&D detector and an S&H detector. To the contrary, neither of the Shin references disclose a frequency modulation limiter-discriminator receiver having an I&D detector. In fact, neither of the Shin references even disclose a FM LD receiver. Thus, Powell et al. is directed to an improvement of a completely different receiver than those disclosed in the Shin references.

The lack of motivation is magnified by the fact that Powell et al. expressly discloses the invention arises from an "unexpectedly advantageous observation" which has completely different application than to the HDTV receivers disclosed in the Shin references. This "unexpectedly advantageous observation" is that when the same limiter-discriminator (LD) output signal is presented to a sample-and-hold (S&H) detector and to an integrate and dump (I&D) detector, an error in one does not necessarily imply an error in the other because the S&H and I&D detector outputs are offset in time by one-half bit and they are not quite correlated. To the extent that the two detector outputs are uncorrelated, comparing the two detector output signals provides information sufficient to identify bit error locations, thereby allowing bit error correction in a subsequent decoder (col. 3, lines 8-18). Thus, Powell et al. expressly discloses the disclosure is only relevant to using a LD output signal along with a sample-and-hold detector and an integrate and dump detector in a FM receiver. To the contrary, neither of the Shin references disclose using a LD output signal along with a sample-and-hold detector and an integrate and dump detector. Accordingly, Powell et al. is not directed to improvements of the receivers disclosed in the Shin references.

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Additionally, there is no motivation because there absolutely no disclosure of either of the Shim references suffering from FM-clicks. For example, Powell et al. discusses providing a new digital FM LD receiver that can identify and eliminate FM-clicks as they occur so that the bit errors can be corrected during the decoding process (col. 4, lines 6-9 and col. 13, lines 18-19). However, there is no disclosure that such clicks exist in the HDTV receivers disclosed in the Shin references. Thus, there is no motivation because there absolutely no disclosure of either of the Shim references suffering from FM-clicks.

Thus, there is absolutely no motivation to use the digital FM receiver techniques disclosed in Powell et al. with the HDTV receivers disclosed in either of the Shin references

Therefore, Applicants respectfully submit that independent claims 1, 13, and 25 define patentable subject matter. The remaining claims depend from the independent claims and therefore also define patentable subject matter. Accordingly, Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. § 103.

CONCLUSION

Based on the foregoing amendments and remarks, Applicants respectfully submit this application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-25 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

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The Commissioner is hereby authorized to deduct any fees arising as a result of this Amendment or any other communication from or to credit any overpayments to Deposit Account No. 50-2117.

Respectfully submitted,



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